

Office Action Summary

Application No.

10/540,549

Applicant(s)

KITAHARA ET AL.

Examiner

Henry S. Hu

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☐ Claim(s) _____ is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

1. This Office Action is in response to **Election** filed on November 26, 2007, which is in response to other Examiner Christopher P. Bruenjes' restriction requirement filed on November 13, 2007 (art unit 1794). **Applicant's election of Group I (Claims 1-12) is made without traverse.** No claim was amended, cancelled or added.

Claims 1-24 with only **one** independent claim (**Claim 1**) are now pending, while all non-elected **Groups II-IV (Claims 13-24)** are withdrawn from consideration. An action follows (see international search report in Applicants' **WO 2004/058833 A1** for **PCT/JP2003/016524**).

Specification

2. The disclosure is objected to because of the following informalities:

On **page 87**, Applicant is reminded of the improper language and format for an **abstract** of the disclosure.

The abstract has **two** paragraphs. The examiner suggests the removal of the tab on the second paragraph starting with **"The present invention"** so that it combines with the first paragraph.

The abstract should be in narrative form and generally **limited to a single paragraph** on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed

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150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phrasology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Appropriate correction is required.

Claim Objections

3. **Claims 1 and 2 are objected to** because of the following informalities:

On **Claim 1** at lines 2-3 and on **Claim 2** at lines 2-3, the scope of molecular weight and its amount for oligomer in Claim 2 is not within the scope of Claim 1. To be specific, oligomer in parent Claim 1 has a molecular weight of not higher than 10,000 and amounts to **not more than 0.05% by mass**, while oligomer in dependent Claim 2 has a molecular weight of not higher than 35,000 and amounts to **not more than 0.7% by mass**.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 2 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Both Claim 1 and Claim 2 provide an oligomer-containing or oligomer-free fluoropolymer, however, the language of **“molecular weight” at line 2 causes indefiniteness**. It is known that **depending upon the methodology for measurement, there are number-average molecular weight, weight-average molecular weight, and viscosity-average molecular weight**. The reporting number can be very much different. Therefore, the applicants need to define how the molecular weight is measured in order to clarify the confusion.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. The limitation of parent **Claim 1** of the present invention relates to *an oligomer-containing or oligomer-free fluoropolymer*, wherein said oligomer has *a molecular weight of not higher than 10,000* and amounts to *not more than 0.05% by mass relative to the mass of said fluoropolymer*.

See other limitations of dependent Claims 2-12.

8. **Claims 1-3, 6-8 and 11 are rejected** under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Cananaugh** et al. (US 5,237,049 or its equivalent WO 94/05706), **Akihiko** et al. (JP 06-080733) or **Ohtani** et al. (EP 472,908 A2).

Applicants have claimed in parent **Claim 1** an unexpected way of obtaining an oligomer-containing or oligomer-free fluoropolymer, wherein said oligomer has *a molecular weight of*

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not higher than 10,000 and amounts to **not more than 0.05% by mass** relative to the mass of said fluoropolymer.

Each of three references including **Cananaugh, Akihiko and Ohtani** has individually disclosed the preparation of some TFE-containing fluoropolymers with reduced impurities (which is including lower oligomer content and/or surfactant) by extracting TFE-containing fluoropolymers with a fluorine-containing solvent such as perfluoroalkane compound.

9. To be specific, see **Cananaugh** at abstract, line 1-9; column 1, line 14-20 for extracting to get lower oligomer impurity. See **Akihiko** at abstract, line 1-7 for extracting a TFE/PAVE copolymer to get lower oligomer impurity. See **Ohtani** at abstract, line 1-4 for extracting a melt processable tetrafluoroethylene copolymer to get lower oligomer impurity.

10. However, each reference of **Cananaugh, Akihiko and Ohtani** is still silent of the claimed amount of not more than 0.05 wt% for its oligomer in the purified fluoropolymer. In light of the fact that the prior art and the present invention recite **(a) substantially identical PTFE polymer composition and (b) made by the same or similar type of polymerization as well as extracting process is used for purification**, a reasonable basis exists to believe that the final products of the invention inherently possess the same properties such as the claimed oligomer content (< 0.05 wt%). Since PTO does not have proper means to conduct experiments, the burden of proof is now shifted to Applicants to show otherwise. *In re Best*, 195 USPQ 430 (CCPA 1977).

It has been held that where applicant claims a composition in terms of function, property or characteristic where said function is not explicitly shown by the reference and where the examiner has explained why the function, property or characteristic is considered inherent in the prior art, it is appropriate for the examiner to make a rejection under both the applicable section of 35 USC 102 and 35 USC 103 such that the burden is placed upon the applicant to provide clear evidence that the respective compositions do in fact differ. *In re Best*, 195 USPQ 430, 433 (CCPA 1977); *In re Fitzgerald et al.*, 205 USPQ 594, 596 (CCPA 1980).

11. Regarding **Claim 2**, it relates to oligomer content and it thereby can be rejected as discussed above.

Regarding **Claims 3 and 11**, both claims relate to cohesive site and its density in fluoropolymer. It can be rejected as discussed above by the issue of inherent property since the cohesive site (as functional group in end-capped group) may be generated in the course of making such a copolymerization.

Regarding **Claims 6 and 7-8**, each reference is making TFE-containing fluorinated copolymers. See the claimed comonomers such as HFP and PAVE throughout specification.

12. **Claims 1-12 are rejected** under 35 U.S.C. 103(a) as being unpatentable over **Araki et al.** (US 6,680,124 B1 or its equivalent **WO 99/45044**) in view of Cananaugh et al. (US 5,237,049 or its equivalent WO 94/05706), Akihiko et al. (JP 06-080733) or Ohtani et al. (EP 472,908 A2).

Applicants have claimed in parent **Claim 1** an unexpected way of obtaining an oligomer-containing or oligomer-free fluoropolymer, wherein said oligomer has a molecular weight of

not higher than 10,000 and amounts to **not more than 0.05% by mass** relative to the mass of said fluoropolymer.

Araki has disclosed the preparation of an adhesive material comprising a fluoropolymer having some cohesive sites such as carbonate group and/or carboxylic halide group at a chain end or a side chain of the polymer. The total cohesive density is at least 150 per 1×10^6 main chain carbon atoms. See abstract, line 1-6.

13. Therefore, **Araki is only silent of oligomer along with the claimed amount of not more than 0.05 wt% in fluoropolymer.** The discussion of the disclosures of the prior art of Cananaugh, Akihiko and Ohtani for Claims 1-3, 6-8 and 11 of this office action is incorporated here by reference. Each of **three** references including **Cananaugh, Akihiko and Ohtani** has individually taught such a subject matter. For instance, each of Cananaugh, Akihiko and Ohtani has disclosed the preparation of some TFE-containing fluoropolymers with reduced impurities (which is including lower oligomer content and/or surfactant) by extracting TFE-containing fluoropolymers with a fluorine-containing solvent such as **perfluoroalkane** compound. By doing so, the adhesion of fluoropolymer to themselves and other material can be improved (see Cananaugh at abstract, line 7-9).

14. In light of the fact the involved references are for the same or similar adhesion purpose as well as some or similar TFE-containing fluoropolymers are involved, one having ordinary skill in the art would therefore have found it obvious to modify Araki's process of making an adhesion

composition by **further purifying the fluoropolymer with extracting with a fluorine-containing solvent such as perfluoroalkane compound** as taught by Cananaugh, Akihiko or Ohtani. By doing so, one would expect that lower oligomer content and/or surfactant can be thereby achieved so as to improve the adhesion of fluoropolymer to themselves and other material.

15. Regarding **Claims 2-8 and 11**, the same rationale as discussed above by Araki and/or the teaching from Cananaugh, Akihiko or Ohtani can be used.

Regarding **Claims 9 and 10**, Araki has disclosed some fluoropolymers made with **VDF** as co-monomer in this regard. See column 6, line 20.

Regarding **Claim 12**, Araki has added some filler including carbon fiber and **carbon (black)** to his adhesion material (column 9, line 39-43). Particularly carbon black may enhance the electric conduction as known in the art.

16. **Claims 4-5, 9-10 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Cananaugh et al. (US 5,237,049 or its equivalent WO 94/05706), Akihiko et al. (JP 06-080733) or Ohtani et al. (EP 472,908 A2), each individually in view of Araki et al. (US 6,680,124 B1 or its equivalent WO 99/45044).

The discussion of the disclosures of the prior art of Araki for Claims 1-12 of this office action is incorporated here by reference. The discussion of the disclosures of the prior art of Cananaugh, Akihiko and Ohtani for Claims 1-3, 6-8 and 11 of this office action is also incorporated here by reference. Regarding dependent **Claims 4-5, 9-10 and 12**, each of **Cananaugh, Akihiko and Ohtani** is still silent of at least three things including: (A) the claimed type and/or amount of cohesive site in the purified fluoropolymer (**Claims 4 and 5**), (B) the use of VDF as co-monomer (**Claims 9 and 10**), and (C) the addition of some electrically conductive filler (**Claim 12**). Araki has taught all three subject matters. By doing so, such obtained adhesion fluoropolymers can directly impart the firm adhesion to a substrate such as a metal, a glass or a resin (see abstract, line 8-11).

17. In light of the fact the involved references are for the same or similar adhesion purpose as well as some or similar TFE-containing fluoropolymers are involved, one having ordinary skill in the art would therefore have found it obvious to modify Cananaugh, Akihiko or Ohtani's process of making an adhesion composition by **further adapting all the above three silent things** as taught by Araki. By doing so, one would expect that better adhesion fluoropolymer could be thereby achieved so as to improve the adhesion of fluoropolymer to themselves and other material including metal and glass.

Conclusion

18. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu** whose telephone number is (571) 272-1103. The

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examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan, can be reached on (571) 272-1119. The **fax** number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Peter D. Mulcahy/
Primary Examiner, Art Unit 1796

Henry S. Hu

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